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ABSTRACT

Most faculty development programs seem to focus on the implementation of innovative teaching methods, and studies attend to questions related to successful introduction of instructional innovations without addressing questions about the maintenance phase. This paper describes findings of a study (conducted at the Faculty of Economics and Business Administration of the University of Maastricht, Netherlands) that focused on the importance of the maintenance phase in securing and further developing the innovation process. The results of the study suggested that the maintenance of an innovation process is strongly influenced by departmental affiliation, the organizational context teachers are working in, the previous teaching experience of the teachers, and a consistent system of quality management. (Author/ND)

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Management of instructional innovation: the case of problem-based education

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Abstract

It appeared that most studies attend to questions on how to introduce instructional innovations successfully without addressing questions about the maintenance phase: how to secure and further develop the innovation process. The present study describes findings of a study (conducted at the Faculty of Economics and Business Administration of the University of Maastricht, the Netherlands) that addressed these questions. The results of this study suggest that the maintenance of a innovation process is strongly influenced by departmental affiliation, the organisational context teachers are working in, the previous teaching experience of the teachers and a consistent system of quality management.

Introduction

Universities encounter increasing pressures to change their instructional practices. However, the design and implementation of innovative programmes is not without difficulties. Several factors account for these problems. First, universities have unique organizational characteristics (Locke, 1984): the dual focus on teaching and research resulting in conflicting time and career demands, the high autonomy of staff members, and so on. Consequently, academic organizations suffer from their inability to strike a satisfactorily balance between individual autonomy and academic freedom on the one hand, and the necessity for organizational efficiency, accountability and control on the other hand (Kozma, 1985). Second, the organizational looseness within universities accounts for the personal character of many innovations in higher education. As a result, a variety of instructors' preferences leads to unclear choices in decision processes. As soon as innovations outreach the level of individual instructors they seem particularly vulnerable for failure and resistance to change. Third, educational research shows that new educational practices are often based on past practices. It is difficult for instructors to employ new teaching methods based on changed beliefs about the teaching-learning process (Bosch & Gijselaers, 1993). Teaching methods may change, but the underlying beliefs do not.

What is known from educational theory about successfully conducting innovations? Classical innovation theory heavily relies on the idea of stages or phases in innovations: adaption, implementation, dissemination (Kozma, 1985). However, Kozma showed that a considerable overlap and ambiguity exists between these stages, and that innovation is evolutionary (new instructional practices are built on past experiences). The implementation of innovative instructional methods is not only influenced by structural factors but also by cultural factors.

Problem-based learning is regarded as a major innovation in higher education. Implementing this approach in new and established schools has a tremendous impact on the way staff members should redefine their teaching. For example, staff members serving the tutor role have to find a balance between giving students enough freedom to discuss issues and intervening in the discussion to make sure that students reach certain goals (Gijselaers, 1996). There are three roles for the faculty in a problem-based learning curriculum: tutoring, serving as a subject-matter consultant for students and developing curriculum materials. Of these roles, the only one for which the faculty has been trained is that of subject-matter consultant (Williams, 1992). This is a very difficult thing for teachers to do. Curriculum designers encounter the boundaries between disciplines when trying to develop multi-disciplinary courses (Milter & Stinson, 1995). Normally, problem-based schools develop faculty development programs to ascertain that the innovations are successful (Boud & Feletti, 1991). But, in general it seems evident that implementing problem-based learning is a difficult and pain-staking process.

How can educational theory about design and implementation of innovations turn out to be effective? The impression is that the majority of faculty development programs focus on the implementation phase. The majority of studies focus mainly at this phase. However, several authors argue that faculty development programs should also target at the other phases, aiming at the development of long-range programs (Boud & Feletti, 1991; Bosch & Gijselaers, 1993,

Williams, 1992). Despite the evident need, only few studies have been conducted about that include other phases in the innovation process (Boud & Feletti, 1991). The majority of these studies focus on the implementation phase: how to introduce instructional innovations successfully?

The present study describes findings of a study targeting at the maintenance phase: how to secure and further develop the innovation process.

The present study will focus on the following questions: (1) what is the state of the art of Problem Based Learning?, in other words, what is the teachers opinion about PBL ?, (2) do different departments have different opinions ?, (3) to what extent is the actual opinion and teaching behaviour influenced by previous teaching experiences ?, (4) how can institutions secure and continue the innovation process?

Method

Subjects. The present study was conducted at the faculty of Economics and Business Administration of the University of Maastricht, the Netherlands. All staff members (full professor, associate professor and assistant professor) received a questionnaire. The questionnaires were filled out anonymously; 107 were returned for a return rate of 55%. The non response was partly due to the fact that some of the staff members were research fellows and had no relation at all with education, or were with sabbatical or staying abroad. The return rate of the four departments of the faculty (Economics, Management Sciences, Accountancy and Finance, and Quantitative Economics) was almost equal.

Description of the curriculum. The four year curriculum is divided into four course periods of 10 weeks each per year. Each course follows the same problem-based format. Students meet with their tutor in small-group tutorials, consisting of twelve students, twice a week for two hours. At the beginning of each course the students are randomly assigned to tutorial groups. The tutor is either a staff member or an elderly student. The first two years of the curriculum of the faculty of Economics and Business Administration in Maastricht are

strictly organized around the principles of Problem Based Learning. The third and fourth year have a somewhat different educational approach: the teachers are free to choose the educational approach. However, they have the restriction of small group work.

Instrument. The questionnaire consisted of 119 items, divided in four categories. The first category was related to background questions like level of education, previous working experiences, graduated in Maastricht or not, academic position and teaching roles. The second category consisted of 84 statements about problem-based learning and the role of the teacher. These statements were five point Likert scale items (categories ranging from 1 = "entirely disagree" to 5 = "entirely agree"). The different subcategories dealt with general questions about problem-based learning, the quality of the graduate students, teaching roles, management of courses, testing and evaluation system. A third category of questions consisted of 19 statements about tutor behaviour. The fourth category consisted of 6 open questions in which the teacher could give his suggestions and opinions about e.g. the weak and strong aspects of the graduates of Maastricht, suggestions for a reward system for teachers and suggestions for the assessment system.

Analysis. The SPSS analysis was used to get mean scores of each item. Associations between background items and individual items were calculated through correlational techniques.

Results

General opinions about Problem-Based Learning (PBL). Averages and standard deviations of all questions were calculated. The results show a decreasing positive attitude towards Problem Based Learning. When the teachers started teaching they were enthusiastic about Problem Based Learning (average = 4.05). However, after a few years of teaching they have become less enthusiastic (average = 3.60). The results show correlation between working period and enthusiasm. Those teachers who worked the longest period (6 - 10 years)

and those who worked the shortest period (0 -2 years) were most positive about PBL. These two groups of staff members were also very motivated to professionalize their skills required by PBL.(The group in between is too much occupated with their academic career and regards the labour intensive educational approach of PBL as a burden). The results of this study show that teachers do not have the opinion that Problem Based Learning is teacher unfriendly. Most of them like to be a tutor (average= 3.80). However, teachers prefer to be a tutor in year 3 and 4 more than in the first and second year of the curriculum in which the themes are more around a basic level.

Effects of departmental affiliation. A significant effect of departmental background was found. The staff members of the department of Quantitative Economics had the lowest average scores on all individual items. They have the lowest enthusiasm for Problem Based Learning at the moment. This group staff members has the opinion that Problem Based Learning is teacher unfriendly. They do not like being a tutor much because they have the impression that the contribution of the tutor to the learning process of the student is very low. They prefer the more traditional teacher centred educational approach. By contrast, the department of Management Sciences has the highest average scores on the individual items. The other two departments had average scores which fluctuate in between.

Relation between teaching and previous teaching experiences. The results seem to confirm the findings in literature that teachers use their past experiences (x = 3.64) The results show a significant difference between staff-members who graduated in Maastricht and those who graduated elsewhere. Especially in fulfilling the role of the tutor the graduates of Maastricht used their experience as a student to a great extent. It also appeared that staff members who graduated elsewhere have a preference for teaching in the third and fourth year. In these two years there is a relative freedom for teachers to choose the educational method: they have the tendency to go back to approaches they are familiar with,the traditional system.

Factors which influence the continuation of the innovation process. The results stress the importance of consistent innovation management as well in the whole curriculum as well for a longer period. It appeared from the results that if the Faculty Board gives the opportunity for a more liberal application of Problem Based Learning the innovation process is going to diminish.

Discussion and conclusion

The results of this study suggest that teachers were motivated when they started with an innovative educational approach. However, their enthusiasm diminishes after a few years. This changing attitude is influenced by different factors. First of all the conflict between teaching and research in higher education has a negative effect on adapting and maintaining an innovative approach. This study showed that staff members who teached two to four years had a negative attitude towards Problem Based Learning. This group is too much occupied with their academic career in order to finish their dissertation. They regard Problem Based learning as a labour intensive educational approach and as a burden. Secondly, the results suggest cultural differences between departments. Especially those departments related to statistics and mathematics tend to feel uneasy within Problem Based Learning. Finally, it appeared that if the curriculum gives any opportunity to use more traditional educational approaches, teachers have a strong tendency to deny the innovative approach and fall back on their previous experiences. These results confirm the findings of Kozma: when teachers have more freedom to choose the educational approach, they show some regression and fall back on past experiences, which has a negative effect on the instructional innovation. In order to keep the instructional innovation process going on it is necessary that the Faculty Board focusses on the organisational context. As well departments as well individual teachers can have, temporarily, different needs. The findings of this study also suggest to keep permanent maintenance on all levels in the organisation.

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